5780_Postlab_02

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1   :

The System Configuration Controller (SYSCFG) peripheral controls multiplexors that lead into the EXTI inputs. This allows us to map specific GPIO pins to interrupts. **The PA0 and PC0 pins are both possible options to be selected by the 'multiplexor tree'. You can't select two things at a time**.

2   :

The lower the number, the higher the priority and there are only 4 software priorities: 0, 1, 2, 3. **0 has highest priority and 3 has the lowest**.

3   :

There are 8 Interrupt priority registers (IPR0-IPR7) that force interrupts into pending state, and show which interrupts are pending. Each IPR register contains four 8-bit regions to set the priority of an interrupt. The two uppermost bits from these regions are implemented so that there are 4 possible software priorities (levels 0-3).

So in total:

- There are 8 registers
- 4 regions in each
- 2 implemented bits in each region and 6 unimplemented

$$8 * 4 * 2 = 64$$

implemented bits

$$8 * 4 * 6 = 192$$

unimplemented bits

4   :

From the discovery kit manual, PA0 is the probe for the push button, PC8 is the probe for the orange LED, and PC9 is the probe for the green LED. I just connected the AD2's Digital I/O Signals to those and added them as signals in the logic analyzer. The result is shown in Figure 1. **It takes 67.2903 μs after pushing the button for the interrupt handler to start**.
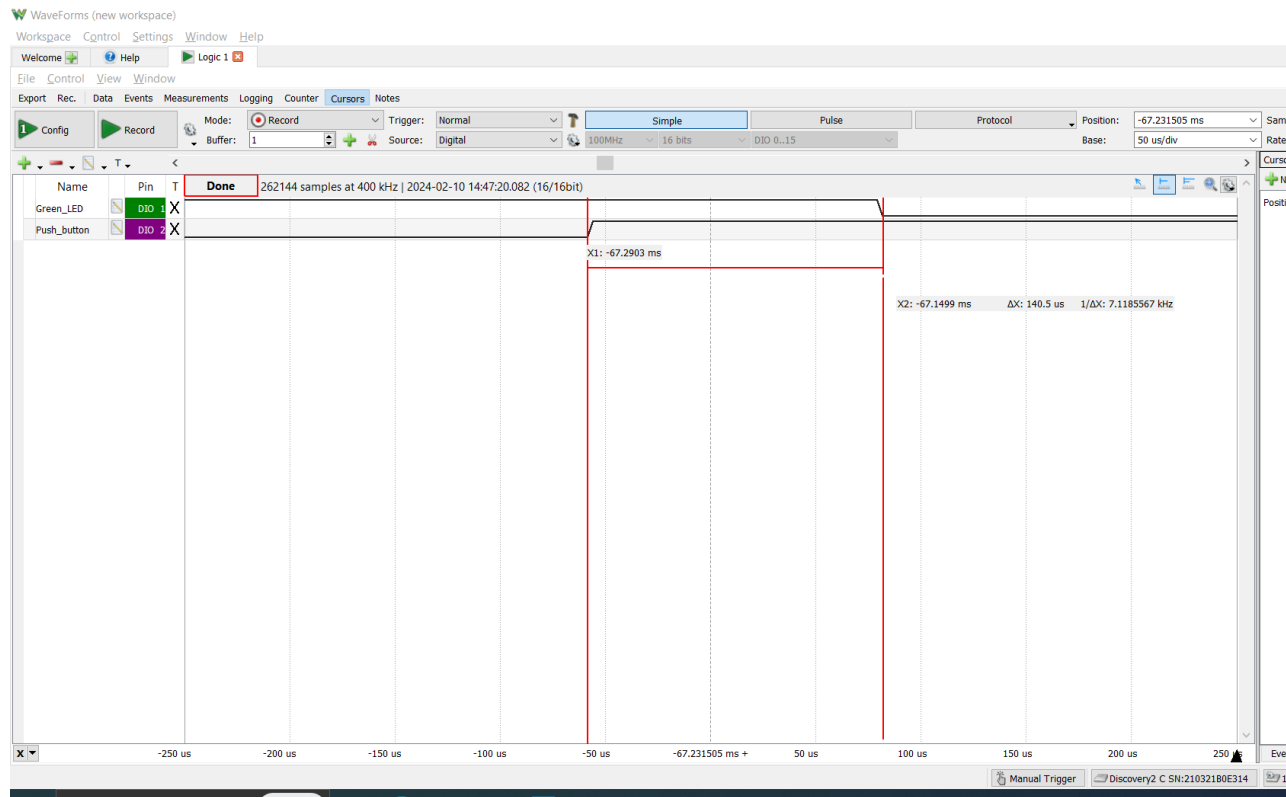

Figure 1: Top line is the green LED and the bottom line is the push button.

5   :

When servicing interrupts, you should clear their pending status after handling them **to prevent the same interrupt from being re-triggered**. This ensures proper handling of subsequent interrupts and **maintains system responsiveness**.